

Appl. No. 09/805,620

In the Claims

Claims 22-35, 38, 40, 43, and 45-47 are pending in the application with claims 27, 38, and 43 amended and claims 36, 37, 39, 41, 42, and 44 cancelled herein.

1-21 (canceled).

22. (previously presented) An atomic layer deposition method comprising:

Injecting at least one purge material through a purge exit port into a deposition chamber defined at least in part by chamber walls;

providing a solid barrier wall inside the chamber to separate the injected purge material from a substrate holder, the solid barrier wall extending into the chamber from at least one of the chamber walls to elevationally below a substrate on the substrate holder; and

forming a purge curtain from the injected purge material, the purge curtain extending downward from elevationally above the substrate holder and outside a lateral periphery of the substrate holder and the purge curtain flowing past the substrate holder and bypassing the substrate holder.

23. (original) The method of claim 22 wherein the purge curtain extends from one of the chamber walls comprising a lid.

24. (original) The method of claim 22 wherein the purge curtain is concentric to the substrate holder and flows axially with the substrate holder.

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25. (original) The method of claim 22 wherein the purge curtain is annular.

26. (original) The method of claim 22 further comprising:
injecting at least one process chemical into the chamber from elevationally above the substrate holder and inside a lateral periphery of the substrate holder; and
delivering the process chemical to a substrate received by the substrate holder.

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27. (currently amended) An atomic layer deposition method comprising:

injecting a deposition precursor into a deposition chamber defined at least in part by chamber walls and comprising a substrate holder inside the chamber, a first of the chamber walls comprising a lid having an outer surface outside the chamber and an inner surface inside the chamber and a second of the chamber walls comprising a body;

exposing a substrate on the substrate holder to the precursor and chemisorbing only one monolayer of precursor material on the substrate in the absence of another deposition precursor;

while injecting the precursor and chemisorbing the monolayer, separately injecting a purge material at a first flow rate through at least one purge passageway through the lid from the outer surface to the inner surface and through a purge exit port into the chamber, the injected purge material flowing along at least a portion of the chamber walls; [[and]]

separating the injected purge material from the substrate holder with a flow director provided inside the chamber and minimizing backflow of the injected purge material towards the substrate holder, the flow director extending downward from elevationally above the substrate holder to elevationally below a substrate on the substrate holder; and

ceasing the precursor injection, substituting the precursor injection for additional purge material injection, and adjusting the first flow rate to a second flow rate different from the first flow rate.

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28. (previously presented) The method of claim 27 wherein the injecting the purge material further comprises not delivering the purge material to a substrate received by the substrate holder.

29. (previously presented) The method of claim 27 further comprising forming a curtain from the injected purge material concentric to the second of the chamber walls, the curtain flowing axially with respect to the chamber.

30. (original) The method of claim 27 further comprising forming an annular curtain from the injected purge material.

31. (original) The method of claim 27 wherein the injecting purge material further comprises delivering the purge material through a dead space as to a precursor injected without the purge injection.

32. (previously presented) The method of claim 27, wherein the flow director is provided on the inner surface of the first of the chamber walls.

33. (original) The method of claim 27 further comprising distributing purge material inside the lid from at least one entry into the lid to a plurality of exits from the lid formed as an about equally spaced ring of exits outside a lateral confine of the substrate holder.

34. (previously presented) The method of claim 27 wherein the injecting the precursor further comprises injecting at least one process chemical into the chamber from elevationally above the substrate holder and inside a lateral periphery of the substrate holder.

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35. (original) The method of claim 34 wherein the injecting the precursor further comprises delivering the precursor to a substrate received by the substrate holder.

36. (cancelled).

37. (cancelled).